



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,218	03/24/2004	Kazuya Ueda	1324.70174	3929

7590 07/14/2006

Patrick G. Burns, Esq.  
GREER, BURNS & CRAIN, LTD.  
Suite 2500  
300 South Wacker Drive  
Chicago, IL 60606

EXAMINER
----------

CHEN, WEN YING PATTY

ART UNIT	PAPER NUMBER
----------	--------------

2871

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/808,218

Applicant(s)

UEDA ET AL.

Examiner

W. Patty Chen

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 April 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |                                                                                                                                              |                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                                                  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                                         | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/24/06</u> . | 6) <input type="checkbox"/> Other: _____                                                |

**DETAILED ACTION**

***Response to Amendment***

Applicant's Amendment filed Apr. 14, 2006 has been received and entered. Claims 1-15 remain pending in the current application.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 6 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Aoki et al. (US 5644415).

With respect to claim 6 (Amended): Aoki et al. disclose in Figure 10 a liquid crystal display, comprising:

a pair of substrates (elements 1, 2) provided opposite to each other with one of the substrates having a pixel electrode (element 3) and the other of the substrates having a common electrode (element 4);

a liquid crystal (element 9) sealed between a pair of substrates; and

a pixel region including at least one low effective voltage area (as shown in Figure 3, element P2) in which an effective voltage applied by the pixel and the common electrodes to the liquid crystal is lower than a voltage applied between the pixel and the common electrodes at

Art Unit: 2871

another area, the at least one low effective area occupying part of the region in a predetermined area ratio, the pixel region having a threshold voltage that is different between the at least one low effective voltage area and said another area;

wherein the area ratio is in the range from 0.5 to 0.9 (Column 7, lines 3-9; wherein the ratio is about 0.5).

With respect to claim 13 (Amended): Aoki et al. disclose in Figure 10 a liquid crystal display, comprising:

a pair of substrates (elements 1, 2) provided opposite to each other with one of the substrates having a pixel electrode (element 3) and the other of the substrates having a common electrode (element 4);

a liquid crystal (element 9) sealed between a pair of substrates; and

a pixel region including at least one low effective voltage area (as shown in Figure 3, element P2) in which an effective voltage applied by the pixel and the common electrodes to the liquid crystal is lower than a voltage applied between the pixel and the common electrodes at another area, the at least one low effective area occupying part of the region in a predetermined area ratio (Column 7, lines 3-9), the pixel region having a threshold voltage that is different between the at least one low effective voltage area and said another area;

wherein the low effective voltage area is provided in the vicinity of an end of the pixel region (as shown in Figure 10, wherein one of the low effective voltage area is at the edge of the pixel region).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 7-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al. (US 5644415) in view of Yoshida et al. (US 5936693).

With respect to claim 1 (Amended): Aoki et al. disclose in Figure 10 a liquid crystal display comprising:

a pair of substrates (elements 1, 2) provided opposite to each other with one of the substrates having a pixel electrode (element 3) and the other of the substrates having a common electrode (element 4);

a liquid crystal (element 9) sealed between a pair of substrates; and

a pixel region including at least one low effective voltage area (as shown in Figure 3, element P2) in which an effective voltage applied by the pixel and the common electrodes to the liquid crystal is lower than a voltage applied between the pixel and the common electrodes at another area, the at least one low effective area occupying part of the region in a predetermined area ratio (Column 7, lines 3-9), the pixel region having a threshold voltage that is different between the at least one low effective voltage area and said another area, and

the pixel region also including a color filter layer (element CF) having one color formed on at least one of the pair of substrates.

Aoki et al. fail to disclose that the effective voltage in the pixel region is different from that in another pixel region including a color filter layer having another color.

However, Yoshida et al. teach in Column 18 lines 20-26 of forming effective voltage in the pixel region including one color filter layer of one color different from that in another pixel region including a color filter layer having another color.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Aoki et al. wherein the effective voltage of one pixel region of one color is different from that of another pixel region of another color as taught by Yoshida et al., since Yoshida et al. teach that such configuration between the different colored pixel regions helps to obtain images having a good

color balance with compensation made for the differences in brightness among the different colors pixels (Column 18, lines 20-26).

As to claim 7: Aoki et al. further disclose in Column 17 line 59 through Column 18 line 6 that the threshold voltage of the low effective voltage area is higher than the threshold voltage of the other area by a predetermined voltage difference; and the voltage difference is in the range from 0.1V to 2.0V.

As to claim 9 (Amended): Aoki et al. further disclose in Figure 10 that the low effective voltage area has a dielectric layer (element 10) formed with a predetermined thickness on at least one of the electrodes.

As to claim 10: Aoki et al. further disclose in Figure 10 that the dielectric layer (element 10) is formed like stripes (Column 9, lines 53-61) having a predetermined layer width and gap width.

As to claim 14: Aoki et al. further disclose that the liquid crystal is a nematic liquid crystal (Column 1, line 36) having a negative dielectric constant anisotropy (Column 2, lines 43-47 and 51-55) whose initial alignment is vertical to a surface of the substrates (Column 1, line 42).

With respect to claim 8 (Amended): Aoki et al. disclose in Figure 10 a liquid crystal display comprising:

a pair of substrates (elements 1, 2) provided opposite to each other with one of the substrates having a pixel electrode (element 3) and the other of the substrates having a common electrode (element 4);

a liquid crystal (element 9) sealed between a pair of substrates; and

a pixel region including at least one low effective voltage area (as shown in Figure 3, element P2) in which an effective voltage applied by the pixel and the common electrodes to the liquid crystal is lower than a voltage applied between the pixel and the common electrodes at another area, the at least one low effective area occupying part of the region in a predetermined area ratio (Column 7, lines 3-9), the pixel region having a threshold voltage that is different between the at least one low effective voltage area and said another area.

Aoki et al. fail to disclose that the area ratio varies depending on the center transmission wavelength  $\lambda$  of a color filter layer that the pixel region has.

However, Yoshida et al. teach in Column 18 lines 8-12 of forming different area ratios with respect to the center transmission wavelength  $\lambda$  of the color filter layer that the pixel region has.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Aoki et al. wherein the effective voltage of one pixel region of one color is different from that of another pixel region of another color as taught by Yoshida et al., since Yoshida et al. teach that such configuration of the area ratio between the different colored pixel regions helps to obtain images having a good color balance with compensation made for the differences in brightness among the different colors pixels (Column 18, lines 20-26).

Claims 2-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al. (US 5644415) and Yoshida et al. (US 5936693) in view of Nishida et al. (US 2002/0030780).



With respect to claims 2-4 (Amended): Aoki et al. and Yoshida et al. disclose all of the limitations set forth in claim 1, but fail to disclose the retardation values of the liquid crystal layer thickness with respect to different wavelength satisfying the equations set forth in claims 2-4.

However, Nishida et al. disclose a liquid crystal display wherein the  $\Delta n$  of the liquid crystal layer regardless the wavelength value is set to be constant (Paragraph 0186, wherein  $\Delta n$  is 0.0067) and that  $d_i / \lambda_i = d_j / \lambda_j$  (Paragraph 0072) regardless of having tilt angle and white is displayed when no polarizer is provided (Paragraphs 0072-0082), therefore, the condition set forth in claims 2 and 4 are met. Nishida et al. further disclose that the wavelength closest to 545 nm (Paragraph 0082, wherein the wavelength is 550nm) has a thickness value of 4.5 $\mu$ m, therefore,

$$\Delta n * (4.5\mu\text{m}) = 301.5\text{nm},$$

which satisfies the condition set forth in claim 3.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Aoki et al. and Yoshida et al. wherein the retardation values of the liquid crystal layer thickness with respect to different wavelength are set as taught by Nishida et al., since Nishida et al. teach that such display characteristic prevents the display from coloring from whichever direction the display apparatus is viewed and that gradation reversal over a larger visibility angle range is also prevented (Paragraphs 0059-0061).

As to claim 5 (Amended): Aoki et al. and Yoshida et al. disclose all of the limitations set forth in claim 1, but fail to disclose the retardation values of the constant liquid crystal layer thickness with respect to different wavelength is between 250nm and 450nm.

However, Nishida et al. disclose a liquid crystal display wherein the  $\Delta n$  of the liquid crystal layer regardless the wavelength value is set to be constant (Paragraph 0186, wherein  $\Delta n$  is 0.0067) and that the thickness of the liquid crystal layer is set to be 4.5  $\mu\text{m}$  (Paragraph 0186), thus have a  $\Delta n(\lambda k) * d = 301.5\text{nm}$ , which is within 250nm and 450nm.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Aoki et al. and Yoshida et al. wherein the retardation values of the constant liquid crystal layer thickness with respect to different wavelength is between 250nm and 450nm as taught by Nishida et al., since Nishida et al. teach that such display characteristic optimizes the brightness of a white display and the color reproduction property (Paragraph 0186).

Claims 11-12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al. (US 5644415) and Yoshida et al. (US 5936693) in view of Kubo et al. (US 2002/0075436).

With respect to claim 11 (Amended): Aoki et al. and Yoshida et al. disclose all of the limitations set forth in claim 1, but fail to disclose that the low effective voltage area has an electrode portion with blanks, formed on at least one of the electrodes.

However, Kubo et al. disclose in Figure 18B a liquid crystal display wherein the low effective voltage area (element 14a) has an electrode portion with blanks (element 14a), formed on at least one of the electrodes (element 14b).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display as taught by Aoki et al. and Yoshida et al. wherein the low effective voltage area has an electrode portion with blanks as taught by Kubo et al., since Kubo et al. teach that by forming blanks on the electrodes in the low effective voltage areas helps to stabilize the inclined orientation of the liquid crystal (Paragraph 0221).

As to claim 12: Aoki et al. further disclose in Figure 10 that the low effective voltage area is formed like stripes (Column 9, lines 53-61) having a predetermined layer width and gap width and Kubo et al. teach that blanks are formed on the electrode portion in the low effective voltage area, therefore, the blanks would be formed like stripes corresponding to the low effective voltage areas having a predetermined electrode width and gap width.

As to claim 15 (Amended): Aoki et al. and Yoshida et al. disclose all of the limitations set forth in claim 14, but fail to disclose that the liquid crystal display further comprising an alignment regulating structure for regulating the alignment of the liquid crystal provided on at least one of the substrates, wherein the pixel region has a plurality of alignment regions in which the liquid crystal is aligned in different directions.

However, Kubo et al. disclose in Figure 29A a liquid crystal display comprising of alignment regulating structures (element 22b) on at least one of the substrates.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display as taught by Aoki et al. and Yoshida et

Art Unit: 2871

al. wherein the liquid crystal display further comprises alignment regulating structures as taught by Kubo et al., since Kubo et al. teach that the alignment structures helps to stabilize the radially-inclined orientation regardless of the applied voltage, thus results in a desirable stress resistance (Paragraph 0285).

### ***Response to Arguments***

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art Unit: 2871

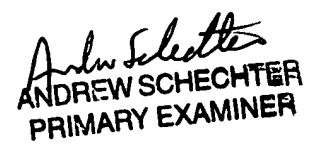
Any inquiry concerning this communication or earlier communications from the examiner should be directed to W. Patty Chen whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

W. Patty Chen  
Examiner  
Art Unit 2871

WPC  
7/06/06

  
ANDREW SCHECHTER  
PRIMARY EXAMINER